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RECURARIZATION DURING THE USE OF DITILIN

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## RECURARIZATION DURING THE USE OF DITILIN

Following is the translation of an article by S. A. Geshelin entitled "Rekurarizatsiya pri Primenenii Ditilina" (English version above) in Vestnik khirurgii imeni I. I. Grekova (Herald of Surgery imeni I. I. Grekova), Vol. LXXXIV, No. 5, 1960, pages 82-83.

From the Surgical Division (Head -- Professor B. Ye. Frankenberg) of Odessa Municipal Clinical Hospital (Chief Physician -- V. M. Levandovskiy).

Ditilin, which was synthesized in the laboratory of A. L. Mndzhoyan, belongs to the group of preparations of a curare-like action. When ditilin is used intravenously, relaxation ordinarily ensues "on the tip of the needle," immediately after the injection of 4-8 ml of a one percent solution; the period of stoppage of respiration lasts no more than three to five minutes. The brevity of the action of ditilin is associated with its rapid destruction by cholinesterase, under the influence of which decomposition of ditilin into choline and succinic acid occurs. The brief removal of spasm of the rima glottidis favorably distinguishes ditilin from diplacin and paramion and renders it irreplaceable for intubation purposes.

The therapeutic breadth of application which under conditions of artificial respiration permits hundredfold paralyzing doses to be administered, the rapidity of the onset of the effect and the brevity of action, the absence of side influences on the parenchymatous organs, the cardiovascular and central nervous system -- all these qualities have led to a wide dissemination of ditilin in anesthesiology. Ditilin is passing from the sphere of long thoracic and abdominal operations into the practice of emergency surgery and traumatology, where it is being used for such brief manipulations as reduction of dislocations, reposition of breaks in the presence of fractures, esophagobronchoscopy.

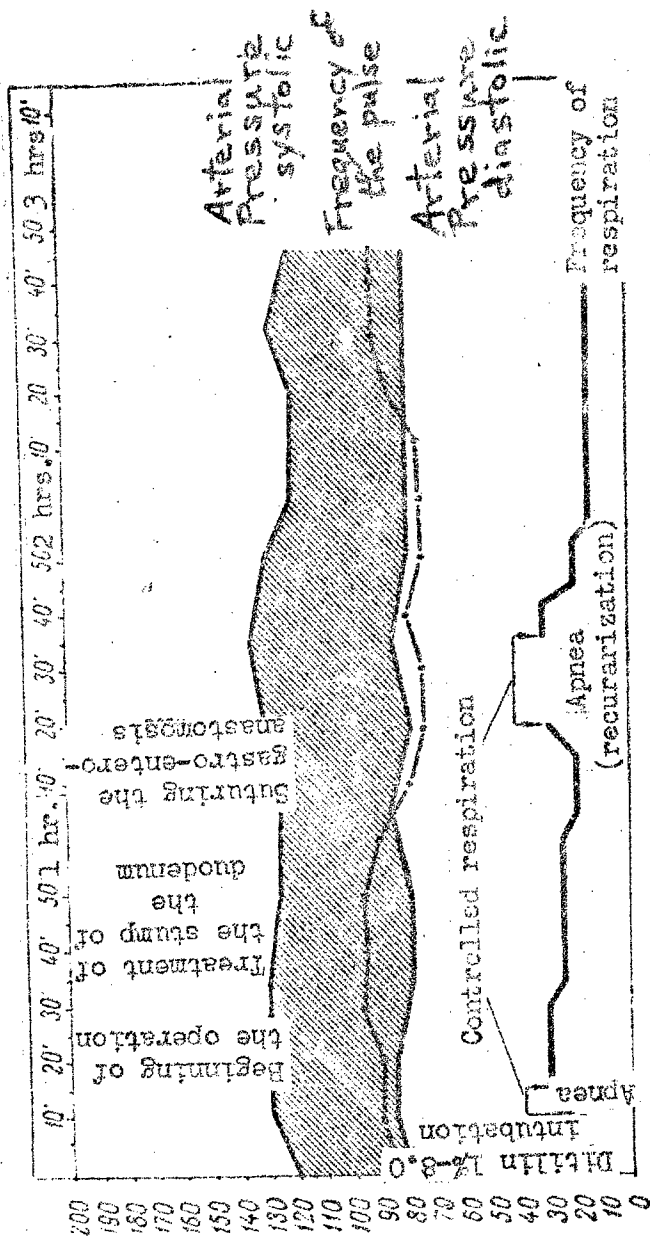
We have not encountered indications in the literature

on the possibility of the development of recurarization associated with the use of ditilin. On the contrary, all authors underline, that the rapid breakdown of ditilin into choline and succinic acid which are indifferent for the organism ensures the complete reversibility of the action of the preparation, and excludes the possibility of cumulative effects and of remote side effects. From this point of view it seems to us that an observation of recurarization when ditilin was being used with the object of intubation merits attention.

Patient G., 29 years, was operated on 3 October 1958 on account of an ulcer of the small curvature of the stomach (resection of the stomach by the Reichel-Polia method). Intubation was conducted under introductory ether-oxygen narcosis after the administration of 8 ml of ditilin. The stoppage of breathing was continued for four minutes (see the figure), in the course of which controlled respiration was conducted with the sac of the anesthesia apparatus. After the restoration of an independent rhythmic respiration the narcosis was maintained with ether without the supplementary administration of relaxants at an ether apparatus scale of 2 - 2.5 and a supply of oxygen of one liter per minute. One hour 10 minutes after the restoration of independent respiration at the time of application of a gastro-intestinal anastomosis we made out several convulsive contractions of the diaphragm, after which stoppage of the respiration ensued again. At this time 40 g of ether had been used up. The state of the patient permitted us to exclude a connection of the apnea with overdosage of ether: the pupils were narrow, the lips were rose-colored, there was no cyanosis, the pulse was 74 beats per minute, strong, the blood pressure was 130/80 mm of mercury. Patients look exactly this way to whom at the time of operation relaxant is repeatedly administered on a background of narcosis, which evokes a stoppage of the respiration. The repeated apnea in our patients lasted for 15 minutes (almost four times longer than the primary stoppage of the respiration after the administration of ditilin). In the course of this time controlled respiration was conducted, the supply of ether was not terminated. At the end of the 15 minutes spontaneous inspirations appeared which passed over into rhythmic independent respiration. At the end of the operation the patient was brought out from narcosis. The subsequent course was without complications.

The present observation has impelled us to communicate the following considerations:

1. When ditilin is used recurarization can develop, the mechanism of which requires elucidation.



Repeated stoppage of respiration in the patient one hour 25 minutes after the administration of difillin and one hour 10 minutes after the restoration of independent respiration

2. In the presence of a brief operation or in the presence of a later period of development of recurarization, the stoppage of respiration can ensue when the patient emerges from narcosis, in the ward. This dictates the necessity of the intent observation of the patient, whose state can require urgent intubation. At least in the first hours after the operation, the observation should be effectuated by an anesthetist who has mastered the technique of intubation.

3. We consider the point of view "Kein Kurare ohne Intubation" (No curare without intubation) to be indisputable and can not agree with Wullenberg who considers that in the presence of an appropriate dosage one can obtain relaxation without stoppage of respiration and conduct the narcosis with a mask method. Experience in the use of relaxants convinces us that the variability in the sensitivity and tolerance of patients for relaxants does not permit one a priori to deduce the exact dose which is necessary for obtaining relaxation without stoppage of respiration, and all the more -- to predict the possibility of recurarization.

4. The use of ditilin, as also of other curare-like preparations, without intubation is associated with unjustified risk and should be condemned.

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